Evaluating the effectiveness of the ROCK inhibitor GSK 429286A in experimental allergic asthma

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Bronchial asthma is a chronic inflammatory disease with an increasing prevalence. Currently, pharmacotherapy of asthma is inadequate because there is no universal drug that exhibits bronchodilator, anti-inflammatory and anti-remodeling effects. Therefore, substances from the Rho kinase (ROCK) inhibitor group have attracted our attention as potential pharmacological treatments. Chronic allergic airway inflammation was initiated by 28 days sensitization with ovalbumin. For the last two weeks of the study, ovalbumin sensitized animals received oral doses of 1 or 10 mg/kg GSK429286A. The effect of GSK429286A on airway hyperactivity was assessed *in vivo* by measuring the number of cough efforts and changes in specific airway resistance (sRaw). The anti-inflammatory effect of GSK429286A was evaluated by measuring the levels of inflammatory interleukins (IL-2, IL-4, IL-5, and IL-13) in lung homogenates. Lung sections and homogenates were analyzed for remodeling markers, namely collagen III and V, transforming growth factor beta 1 (TGF-β1), and smooth muscle actin (SMA). GSK429286A significantly reduced the number of coughs and sRaw *in vivo*. This ROCK inhibitor decreased the levels of inflammatory cytokines (IL-2, IL-4, and IL-5) and remodeling markers (collagen III and V, TGF-β1, and SMA). Our results confirmed the promising potential of the ROCK inhibitor GSK429286A as a therapeutic agent for allergic airway inflammation.

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